species of *Galeodes* of similar appearance, and perhaps poisonous, which would account for the fear of the natives.

Mr. B. P. Mann stated that he had decapitated some living *Caloptenus femur-rubrum* to utilize the remains as food for tortoises, and that he had observed that while the bodies were upon the ground in natural posture they exhibited apparently normal powers of saltitation. Some ants having seized the tarsi of the decapitated locusts, the latter sprang away with vigor and alighted upon their feet again. The experiment was repeated several times with the same and with different individuals. When the locusts were confined so that they could not jump, they kicked vigorously and flung the ants away from them. Locusts confined but not mutilated did likewise for a time, but after awhile yielded to the ants, and allowed themselves to be bitten without resistance.

Mr. Schwarz read the following paper:

COLEOPTERA ON BLACK LOCUST (Robinia pseudacacia).

By E. A. Schwarz.

Early in May, Mr. H. Ulke found a rare and interesting Cucujid beetle, *Ino reclusa*, on dead branches and trunks of black locust trees, and as I was desirous of finding this species myself, I made during May and June a rather careful investigation of a few small trees which had recently died from the combined influence of fire and insect attacks. A few of the most promising pieces of the trunks and larger branches were carried home by me, and an astonishing number of specimens bred from them. The following list includes the species that have been bred up to the middle of June, as well as those which were cut from the trees in the field. All come from a small locality in the vicinity of Washington known among the resident entomologists under the name of "red-bug meadow," and where, besides the Acarid which furnished the name, a host of rare insects of all orders can be found throughout the whole year.

Oligota n. sp., common.
? Leptusa sp., not rare.
Sacium lunatum, common.
Læmophlœus adustus, common.
Sinoxylon dinoderoides, two specimens.
Cyrtinus pygmæus, several specimens.

Læmophlœus modestus, several specimens.
Ino reclusa, common.
Lathropus vernalis, not rare.
Soronia undulata, several specimens.
Amphicrossus ciliatus, one specimen.
Trogosita corticalis, not rare.
Agrilus egenus, common.
Petalium bistriatum, common.
Leptostylus commixtus, common.
Liopus fascicularis, two specimens.
Ecyrus dasycerus, common.
Mycetochares haldemani, one specimen.
Zaglyptus striatus, common.
Plocamus hispidulus, not rare.
Hypothenemus eruditus, common.
Micracis rudis, one specimen.
Eusphyrus walshii, not rare.[*]

Any one who is in the least acquainted with the food-habits of Coleoptera will at once see that the above list contains very few species which may be peculiar to the Black Locust. The *Staphylinidæ* and the *Trogosita* are probably predaceous; all of the *Cerambycidæ* and some of the other species are known to live in other trees; some other species are sap-beetles, not particular in the choice of trees, and there remain only the following, to be briefly commented upon: *Sinoxylon dinoderoides*—there is no previous record of food-habits, but judging from the polyphagous habits of allied species it is not likely that it will prove to be confined to Black Locust. *Ino reclusa*, previously known only from Texas, where it occurred on Hackberry. *Zaglyptus striatus* breeds in great numbers in the outer layers of nearly dead wood and is possibly peculiar to this tree. *Plocamus hispidulus* is known to me only from Black Locust, but is also not an injurious species since it lives like the preceding. *Micracis rudis*—I failed to discover the gallery of this, and from the single specimen obtained it would be premature to draw conclusions as to food-habits. It has previously been recorded as boring under bark of Hackberry. *Agrilus egenus* has frequently been bred before from branches of Black Locust, and is the only species on my list which may be injurious to the tree.

The Black Locust is very abundant in the vicinity of Washington but almost exclusively in the form of bushes or small trees, while larger trees are very scarce except in protected places, and still scarcer are healthy large trees. It is evident that the growth of the tree must have one or several serious checks, and while the frequent fires no doubt largely contribute to prevent a healthy growth of the tree I have become convinced that the principal cause of this failure is the work of a single insect, the Lepidopterous gall-maker—*Ecdytolopha insitiana*. Dr. T. W. Harris gives a good account of what he found as the most destructive enemy of the tree, viz., the well-known *Cyllene robiniæ*, and attributes to it the complete disappearance of the tree in some of the Western States. He is no doubt correct in this opinion for the localities referred to by him, but in the vicinity of Washington this Cerambycid yields the first rank to the *Ecdytolopha*. This is an extremely abundant species, and it is only to be wondered that its destructiveness to the Black Locust did not attract the attention of Harris or the other older authors. It oviposits in vigorous young shoots, which usually die soon after the moth has issued from the gall, or which at best remain sickly and never grow up to a large tree. The wound rarely heals over; on the contrary, it is usually enlarged by the action of numerous sap-beetles or other insects which invade the deserted gall.

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[*] Two species of Elaterid larvæ, a Buprestid larva (*Chrysobothris ?*), a Melandryid (?) larva and several Cerambycid larvæ dried up, and were not bred.

Cyllene robiniæ comes next in importance as an enemy of this tree. Although a very common insect near Washington, it is not so universally distributed as the gall-moth and seems to live in large colonies, affecting all trees of small groves, while long hillsides full of locust trees are not infested by it. There are always numerous larvæ in a single trunk, and a tree once infested is usually occupied by two or three successive generations of larvæ until it dies. *Xyleutes robiniæ* would be equally destructive but is much rarer here, and apparently prefers other trees. Whether or not *Agrilus egenus* is to be classed among the important enemies of the Black Locust must be left undecided, but it certainly prefers to breed under the bark of branches of small trunks which have already greatly suffered from various other causes.

The host of insects feeding on the leaves may be divided in two classes. Those which feed externally on the leaves (numerous Lepidoptera, various *Tenthredinidæ* and Coleoptera) do not seriously injure the tree. Total defoliation by them hardly ever takes place, and the damage caused by all of them combined is certainly much smaller than that done by the second class, the leaf-mining species (various *Tineidæ* and *Odontota dorsalis*). These produce almost every year that burnt appearance of the locust trees so noticeable in July or later in the season, and the premature loss of all or most leaves naturally weakens the trees. The Elm trees in our parks, when defoliated by the second generation of *Galeruca xanthomelæna*, produce a new growth of leaves and are green in the autumn; but the Black Locust, if once defoliated, remains so for the rest of the season. These leaf-mining species, and more especially *Odontota dorsalis*, were exceptionally rare this season, and no appreciable damage was done by them.

There is some confusion in the statements of various authors regarding the species of *Apion*, which breeds in the seeds or feeds on the leaves of the Black Locust. Say states that Dr. Melsheimer found *Apion rostrum* on the leaves; Dr. Harris says that *A. rostrum* breeds in the seeds of *Baptisia tinctoria*, and that "a smaller kind somewhat like it inhabits the pods and eats the seed of the locust tree;" Dr. Fitch, in his 5th Report, enumerates *A. rostrum* among the locust tree insects, and remarks that the species is very variable in size and sculpture, that it eats holes in the leaves, and that it probably breeds in the seeds; Dr. LeConte, in the "Rhynchophora," simply says that the species from Black Locust is different from *A. rostrum;* Dr. Packard, in his Bulletin on Forestry Insects, has again *A. rostrum* among the Black Locust insects, and generally follows Fitch's account. I have myself never found *A. rostrum* on the Black Locust, but the species so commonly found feeding on the leaves of this tree is undoubtedly *A. nigrum* Herbst (as redescribed by Prof. J. B. Smith), and I feel confident that this is the same species which is said by Harris to breed in the seeds of the tree. At any rate, *A. rostrum* should no longer be included among the Black Locust insects.

Spermophagus robiniæ should be omitted from the list of Black Locust insects, since it cannot possibly live in the seeds of the tree, for the reason that the larva is at least five times larger than the seed. Its only food-plant is the Honey Locust (*Gleditschia triacanthus*), the seed of which corresponds in size with that of the larva.

Mr. Howard stated that so far from there being no large locust trees in the vicinity of Washington, they were very abundant in old yards in Maryland near Washington, where this tree seemed to have been a favorite. Of leaf-miners, he mentioned *Gelechia pseudacaciella* Chamb. as of chief importance, the leaves frequently being whitened by the work of their larvæ. He had particularly noted this appearance in the case of young trees bordering fences during a recent drive of a few miles into the country.

Prof. Riley stated that approaching and up to Hagerstown, Md., the trees were seared by *Odontota dorsalis*. He agreed in general with Mr. Schwarz as to the cause of the failure of the locust to attain considerable size, but that the increase of the locust-borer, *Cyllene robiniæ*, was largely the cause of this.

He said, further, that the nature of the soil had much to do with the successful growth of the tree, instancing in this connection that at Davenport, Iowa, and other localities that he was aware of, on high and dry land with a limestone subsoil, it became a large tree, but in low, moist ground it was seriously attacked.

Mr. Schwarz stated, in reply to Mr. Howard, that his paper had been prepared two months previously, and he admitted that the various leaf-miners, and particularly those mentioned by Messrs. Riley and Howard, had greatly increased outside of the District. He stated also that in Europe the tree was a magnificent one.

Mr. Howard stated that the freedom of the locust trees in the grounds of the Department from leaf-miners was doubtless owing to the fact that the leaves were regularly raked up and disposed of in the fall.

Prof. Riley called attention to the curious fact that in the case of the Locust and Hickory Cyllene the larva of one was footless and the other was provided with feet, and that this marked structural difference in such closely allied species also occurred in the case of the genus *Prodoxus* and *Pronuba*, and forcibly illustrated the folly of attaching too great classificatory value to larval characters.

Mr. Schwarz exhibited the burrows of some Scolytid beetles, and explained them by the following remarks:

NOTES ON THE BREEDING HABITS OF SOME SCOLYTIDS.

By E. A. Schwarz.

Xyloterus politus.—This is an abundant, and, at the same time, very destructive species, yet very little seems to be published of its food-habits. Mr. J. W. Randall, who described it as *Tomicus gularis*, found it "about the sap of newly-cut maple trees in April," and Dr. J. A. Lintner found it "depredating upon maple trees." Some years ago it attacked and killed, within less than two years, two beautiful trees of silver birch (*Betula alba*) in the grounds of Mr. Bela